Mail Stop Appeal Brief - Patents

PATENT Attorney Docket No. MTI-31529

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellant	:	Ronald A. Weimer
Serial No.	:	09/935,255
Filing Date	:	August 22, 2001
For	:	Method of Composite Gate Formation
Group Art Unit:		2893
Examiner	:	CHEN, Jack S. J.
Confirmation No.:		1208

CERTIFICATION OF SUBMISSION

I hereby certify that, on the date shown below, this correspondence is being transmitted via the Patent Electronic Filing System (EFS) at the U.S. Patent and Trademark Office.

Date: January 15, 2010 Jue B. Palmatier

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
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RESPONSE TO NOTICE OF NON-COMPLIANT APPEAL BRIEF

Sir:

This is in response to the Notice of Non-Compliant Appeal Brief, mailed January 8, 2010. The notice indicated a discrepancy with respect to the statement of the status of all claims.

A revised **SUMMARY OF CLAIMED SUBJECT MATTER** begins at *page 2* of this paper.

Remarks begin on *page 5* of this paper.

Summary of Claimed Subject Matter

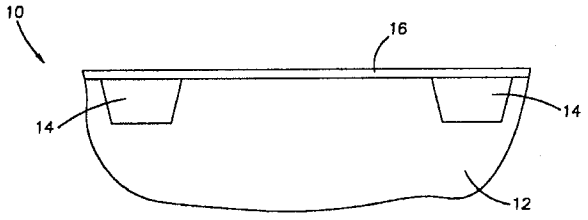
Please replace the section entitled 'Summary of Claimed Subject Matter' as follows:

V. SUMMARY OF CLAIMED SUBJECT MATTER

All of the claims under appeal are drawn to various embodiments of a method of forming a silicon nitride barrier layer that is effective to inhibit passage of a dopant into an underlying dielectric/oxide material.

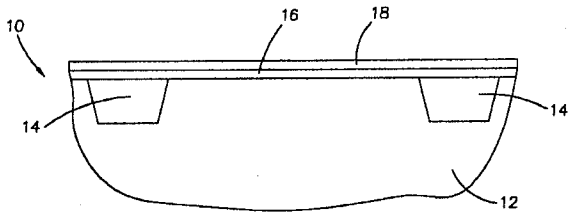
The independent claims under appeal are 1, 5, 7, 8, 9, 16, 17, 18, 19 and 20.

The claimed method of forming a silicon nitride barrier layer as recited in the independent claims is illustrated in Figs. 1-3 (shown below) and described in the specification at page 5, line 22 to page 7, line 24.



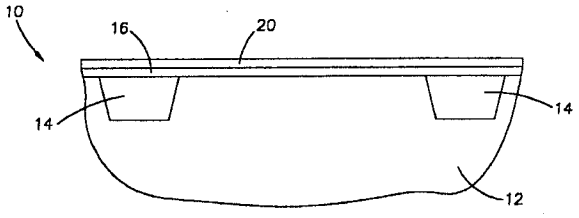
⇐ ***dielectric/gate oxide* 16**

FIG.1



⇐ ***silicon layer* 18**

FIG.2



⇐ ***silicon nitride barrier layer* 20**

FIG.3

Appellant's method is distinguished from the cited prior art by the formation of a continuous silicon layer (**18**) over the dielectric material (**16**) – and a silicon nitride layer (**20**) that is an effective dopant barrier.

Regarding independent Claim 1, the method is illustrated in **Figs. 1-3** (shown above) and described in the specification at page 6, line 3 to page 7, line 24. A dielectric material (**16**) is exposed to a silicon gas under low partial pressure to deposit a continuous layer of silicon (**18**) over the dielectric material, as illustrated in **Fig. 2** and described at page 6, line 15 to page 7, line 2. The formation of the silicon layer (**18**) as a 'continuous' layer is illustrated in **Fig. 2** and described at page 6, lines 15-22. (The silicon layer (**18**) as a 'continuous' layer is further discussed below with regard to the Section 112(1) rejection.) Exposing the silicon layer to a nitrogen gas to nitridize the silicon layer (**18**) and form a continuous silicon nitride barrier layer (**20**) that is effective to inhibit passage of a dopant into the underlying dielectric material (**16**) is illustrated in **Fig. 3** and described at page 7, lines 3-22. The silicon nitride layer (**20**) as a barrier to inhibit passage of dopants (e.g., boron) is described at page 7, lines 23-24, and in Claims 53-54 as originally filed.

Independent Claim 5 recites the elements of Claim 1, with the exception of use of the term 'irradiating' with a silicon gas (as described in the specification at page 6, line 15), the term 'to nucleate' the dielectric material with silicon (as described at page 16, line 16), and exposing the silicon layer to nitrogen gas to 'form' a silicon nitride barrier layer.

Independent Claim 7 recites the elements of Claim 1, with the exception of the use of the term 'nitridizing' the silicon layer (as described at page 7, line 3).

Independent Claim 8 recites the elements of Claim 1, with the exception of exposing a 'surface' of the dielectric material (as described in the specification at page 6, line 17) to silicon gas to 'nucleate' the surface of the dielectric material (as described at page 16, line 16).

Independent Claim 9 recites the elements of Claim 1, with the exception of exposing a dielectric material to a silicon gas at a partial pressure of about 10^{-2} Torr or less (as described at page 6, line 28), and the use of the term 'nitridizing' the silicon layer.'

Independent Claim 16 recites the elements of Claim 1, with the exception of exposing a dielectric material to a silicon gas at a partial pressure of about 10^{-2} Torr or less (as described at page 6, line 28) to 'nucleate' the surface of the dielectric material (as described at page 16, line 16).

Independent Claim 17 recites the elements of Claim 16 with the additional limitations of temperature and duration of exposing the dielectric material to the silicon gas (as described at page 6, line 28 to page 7, line 2).

Independent Claim 18 recites the elements of Claim 1, with the exception of the limitation of 'thermal annealing' the silicon layer in nitrogen gas to 'form' the nitride barrier layer (as described at page 2, line 27, and at page 3, lines 8 and 16).

Independent Claim 19 recites the elements of Claim 1, with the additional limitation of exposing the silicon layer to nitrogen gas at a temperature of about 700-900°C (as described at page 7, line 12).

Independent Claim 20 recites the elements of Claim 19, with the additional limitations of pressure, flow rate and duration (as described in the specification at page 7, lines 12-13).

Remarks

This is in response to the Notice of Non-Compliant Appeal Brief, mailed January 8, 2010. The notice indicated a discrepancy in the Summary of Claimed Subject Matter. The Examiner contended that this section did not refer to all independent Claims 5, 7, 8, 9 and 16-20 on appeal to specification by page and line number or paragraph number and to the drawing.

Applicant hereby submits a revised section entitled 'Summary of Claimed Subject Matter' of the non-compliant Appeal Brief, *with traverse*.

In the Appeal Brief filed October 12, 2009, the Summary of Claimed Subjected Matter included reference to Figs. 1-3 and separately referred to each of the independent Claims 5, 7, 8, 9 and 16-20, with reference to the specification by page and line number.

The revised corrected section submitted herein, again includes reference to Figs. 1-3 and separately refers to each of the independent claims with reference to the specification by page and line number.

Only the amended section is submitted herewith. The remainder of Applicant's Appeal Brief, filed October 12, 2009, has not been re-submitted, and entry and consideration of Applicant's previously filed remarks is requested.

Extension of Term. The proceedings herein are for a patent application and the provisions of 37 CFR § 1.136 apply. Appellant believes that no extension of term is required, but conditionally petitions for an extension of time if so required. If any extension and/or fee are required, please charge Account No. 23-2053.

For the reasons stated in the presented arguments, Appellant believes that the claims on appeal comply with 35 U.S.C. §112(1) and §§ 102/103, and requests that the final rejection of the claims on appeal be reversed.

Respectfully submitted,

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Dated: January 15, 2010

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